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**MICROFILM CONTAINER SURVEY (U)**

by

**J. B. Malcom**

**12 November 1971**

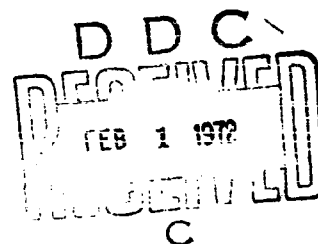


prepared for

**ENGINEERING DATA STORAGE & RETRIEVAL (EDS&R) PROJECT**

**PICATINNY ARSENAL**

**Dover, New Jersey 07801**



Under Contract DAAA21-69-C-0642

by

**DATAFLOW SYSTEMS INCORPORATED**

7758 Wisconsin Avenue

Bethesda, Maryland 20014

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<p>This survey provides an overview of the field of currently available microfilm containers. The report lists the manufacturers' names, addresses and also the name of the person to contact for more information. Also provided is the physical data on the container manufactured along with a sketch of the item showing the physical dimensions of the container. A proposed addition to this report (to be issued as a revision where information is available) is to include details on the interchangeable cartridge being developed at Picatinny Arsenal by the Engineering Data Storage and Retrieval Project.</p>		

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Technical Services Directorate

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Dover, New Jersey 07801

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PREFACE  
First Reissue

Since the initial distribution of this report in July of 1971, additional containers have become available in conjunction with the new microform systems. Comments on the initial report have also been received and are incorporated in this first reissue.

The Micro 8 Company has introduced a 8mm cassette for microform systems. The DSI Systems Inc. 16mm cassette, now marketed by Stromberg Datagraphix, has also been included in this reissue.

Additional microfilm reader compatibilities have been brought to our attention and have been added to the data sheets. Dimensions in error have been corrected. Of particular note is the continued production of Eastman Kodak Recordak equipment using their Recordak Film Magazine, previously noted in Section 6 as discontinued.

Additional containers and compatibilities will be noted as they become available and may be included in future revisions.

All comments as to the format, content and usefulness of this publication as well as suggestions for its improvement are earnestly solicited. They may be forwarded to: Department of Army, Picatinny Arsenal, Dover, New Jersey, 07801; Attention: SMISPA-TS-T-F (L. Volkheimer).

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## Microfilm Container Survey

### 1.0 Introduction

The microfilm industry has standardized on film widths of 16mm, 35mm, 70mm and 105mm. The packaging of these films into cartridges and cassettes for use in microfilm readers, however, has been dependent upon the equipment manufacturer's requirements and little standardization exists. The container of one manufacturer is not interchangeable with those of a second in most equipment. This situation is expanding further in the recent years as new computer-oriented firms enter the microfilm field.

Large users of microfilm equipment and systems, such as the Department of Defense, could simplify their production and packaging of 16mm and 35mm microfilm publications if standard interchangeable cartridges or cassettes for 16 and 35mm microfilm were possible. A study effort, under the American National Standards Institute and the Department of the Army, is striving toward standards for this area.

### 2.0 Objective

This technical note presents the results of an informal survey made of known manufacturers of microfilm containers used in microfilm readers and reader/printers. The information is intended to serve as an overview of the field of currently available microfilm containers with some sort of easy-rapid or self-threading feature. Emphasis has been placed on the overall physical size and the spindle/drive mechanism interface, since these are the key elements of interchangeability.



### 3.0 Methodology

An initial list of persons from the microfilm industry, compiled by the Contract Project Officer, was supplemented with additional industry contacts. A letter was sent to each, requesting information on any containers they manufacture. A sample of the proposed format was included.

Additional sources were determined by inquiry to others in the industry. These were followed up by letters and telephone calls. Those originally queried who did not respond were queried again both by letter and telephone. In the majority of the cases the information desired was readily offered. Over sixteen formal requests were issued, and replies were obtained from all but two producers of microfilm containers.

### 4.0 Results

The known manufacturers of self threading or rapid threading microfilm containers are tabulated in figure 1.

Following the figure, descriptive sheets are given for each container.

### 5.0 Discussion

Each of the major manufacturers of microfilm equipment have their own container essentially fitting only their own motor driven readers.

Only one concern, Information Design, Inc., makes equipment to convert existing microfilm readers to "cartridge" type systems, and even then a special container must be used.

Several microfilm readers which will accept more than one cartridge type are currently available. Automatic threading, however, is not available on these readers.

# Microfilm Containers with Cores

Manufacturer	Type	Size
Alpha Vector	Double Core	11-5/8" x 3-7/8" x 1-11/32"
Bell & Howell	Double Core	6-1/4" x 4-7/8" x 1"
Burroughs Corp.	Single Core	4" x 4" x 1"
DSI Systems Inc.	Double Core	6-1/8" x 4-3/4" x 7/8"
Eastman Kodak	Single Core	4" x 4" x 1"
Information Design, Inc.	Single Core	3-3/4" x 3-3/4" x 1"
	Single Core 35mm	3-3/4" x 3-3/4" x 1-3/4"
Information Handling Service	Double Core	6-3/4" x 3" x 3/4"
Memorex Corp.	Double Core	7-3/8" x 3-1/4" x 1"
Micro 8 Company	Double Core 8mm	5" x 2" x 5/8"
Stromberg Datagraphix	Single Core	4-1/2" x 4-1/2" x 1"
3M Co.	Single Core	4" x 4" x 1"
Western Reserve Electronics*	Double Core	8-3/4" x 6-3/4" x 1-1/2"

\*Information not provided; container was developed under an Army contract and is not in production.

Figure 1

The newer Eastman Kodak microfilm readers utilize a standard 16mm or 35mm reel with a Thread-Easy<sup>(1)</sup> threading mechanism. These are not containers per se, but rather constitute a threading system available only in their readers even though they use a standard reel.

## 6.0 Trends

No trend can be clearly stated in the spread of container microfilm systems, but several observations can be made.

The 3M Co.'s cartridge design has been licensed to other companies for use in microfilm readers, and several new readers use their cartridges.

While Eastman Kodak has introduced a new line of equipment using their Thread-Easy design with a standard reel, other equipment using the Recordak Film Magazine continues in production including one of their newest readers, the Recordak Microstar PR-1.

We must also note the Memorex cassette and its interchangeable core design which permits rapid changing of the film contents by loading and threading a new film wound on a core. This is the only container designed for easy reloading of the film. The container's overall dimensions are identical to the standard data processing card. This size has also been adapted for a microfiche format.

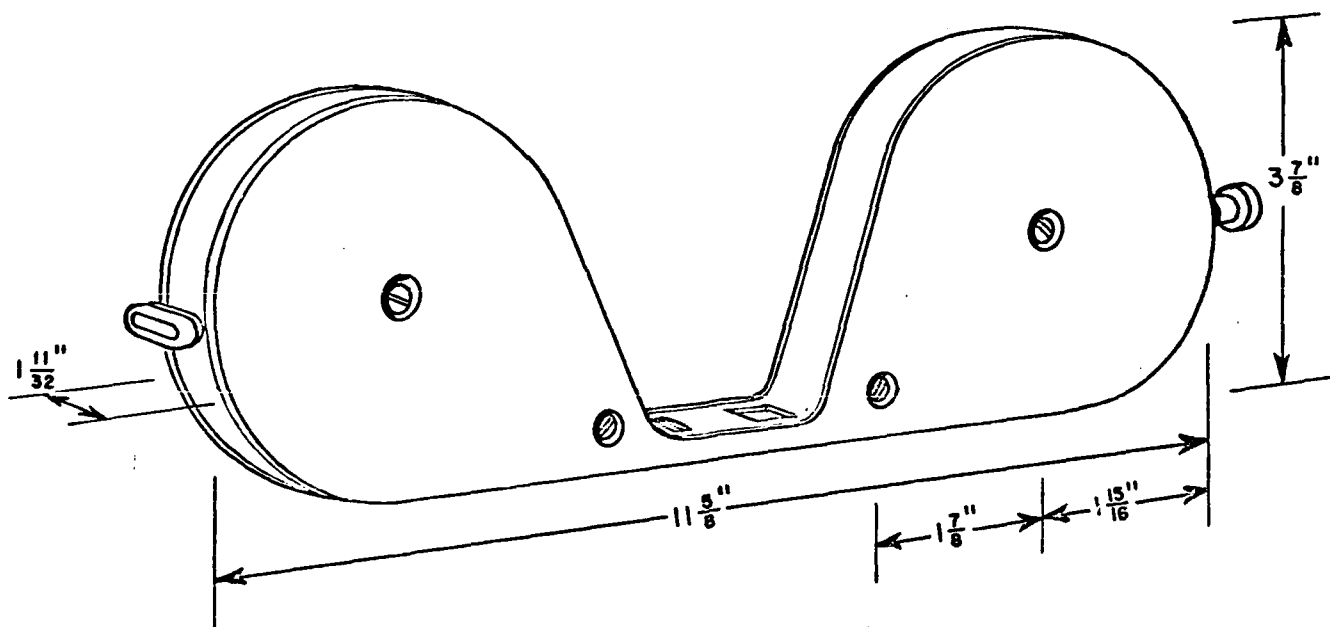
## 7.0 Conclusions

Proprietary positions appear to preclude development of a "standard container," but a series of interchangeable cartridge or container designs are possible. Design guides for future compatibility are feasible with standards developed at a later date. A range of sizes, methods and means are desirable in these guides to permit innovation. Overall size, core and spindle design, and film pick

(1) TM Eastman Kodak Co.

up point are practical starting points, for example. Evolution of a military specification for DOD compatibility would develop both an internal DOD standard and guidelines for industry.

Manufacturer: Alpha-Vector Incorporated      Type: 16 - 105mm cassette  
 Address: 501 Fifth Avenue  
 New York, New York 10017  
 Person to Contact: Dr. H. J. Ghelberg  
 Used with: AV-100 Mass Storage Retrieval Station  
 Film Size and Capacity: 100 ft. of 7.5 mil film available in 16mm, 35mm, 70mm, and 105mm sizes.  
 Spindle Type: Self-contained drive/ tracking mechanism  
 List Prices: Not quoted  
 Comments: This is a special cassette designed only for use with the AV-100 retrieval unit. Cassette width varies with film size.



Manufacturer: Bell & Howell Co.  
Business Equipment Group

Type:  
16mm cassette

Address: 6800 McCormick Road  
Chicago, Illinois 60645

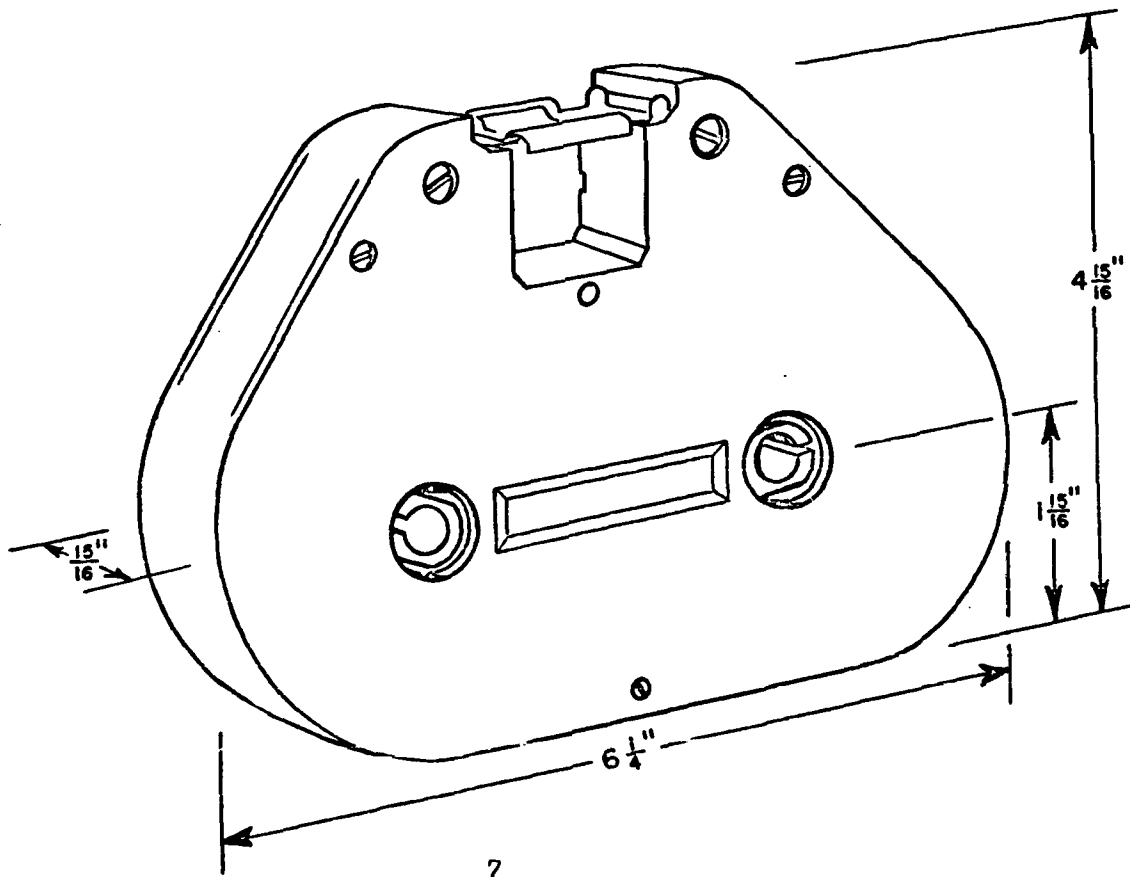
Person to  
Contact: Aldolph J. Garwin

Used with: B&H Autoload I, Autoload II

Film Size and  
Capacity: 16mm x 100' (5 mil)

Spindle Type: 5/16" round shaft

List Prices:	1 - 4	3.50 each
	5 - 95	2.85 each
	100 - 495	2.75 each
	500 - 999	2.60 each
	1000 +	2.50 each



Manufacturer: Burroughs Corporation  
Address: Great Valley Laboratories  
Paoli, Pennsylvania 19301

Type: 16mm cartridge

Person to  
Contact: Mr. Robert Cain

Used with: Burroughs Microfilm Readers B9061-1 & B9061-2

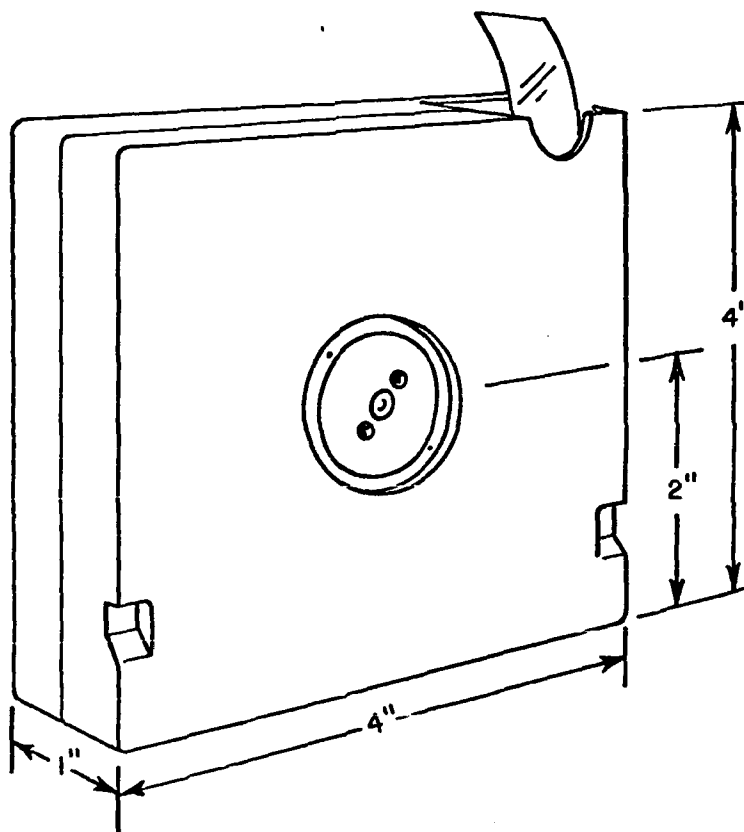
Film Size & Capacity 16mm x 100' (5 mil base)

Spindle Type: 1-1/4" centering hub

List Price: \$1.50

Note: Basically similar to Eastman Kodak Cartridge  
1A and 2A which can be used in the Burroughs  
equipment.

Compatible with: Dietzgen 4317  
Microfilm Products 2000  
Ednalite



Manufacturer: DSI Systems Inc.

Type:  
16mm cassette

Address: 15 Columbus Circle  
New York, New York 10023

Person to  
Contact: Mr. Robert Harte

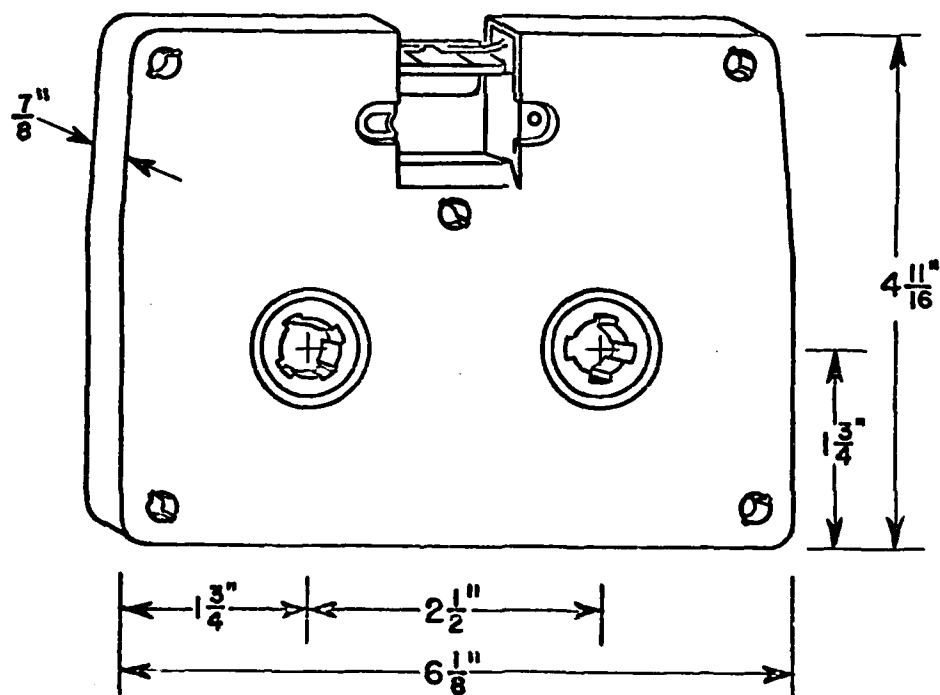
Used with: Stromberg Datagraphix Microsearch (DMS)

Film Size and  
Capacity: 16mm x 100' (5 mil base)

Spindle Type: 15/16" special

List Prices: \$6.00 each

Comments: Marketed by Stromberg Datagraphix





Manufacturer: Eastman Kodak Co.  
Address: 343 State Street  
Rochester, New York 14605

Type: 16mm cartridge  
Model: 1A  
2A

Person to

Contact: Mr. M. Schreiber

Used with: Various Recordak Readers

Automatic Threading

Microstar Reader PR-1

Loadstar Readers PS, PS-1, PS-1-K

Miracode Readers PEK & PEK-1

Manual Threading Readers

Starlet Reader PTA

20/20 Portable Reader P-20

Magnaprint Reader PE-1A

Film Size & Capacity: 16mm x 100' (5 mil base)

Spindle Type: 1 1/4" centering hub

List Price:

15-149  
Case (150)

1A

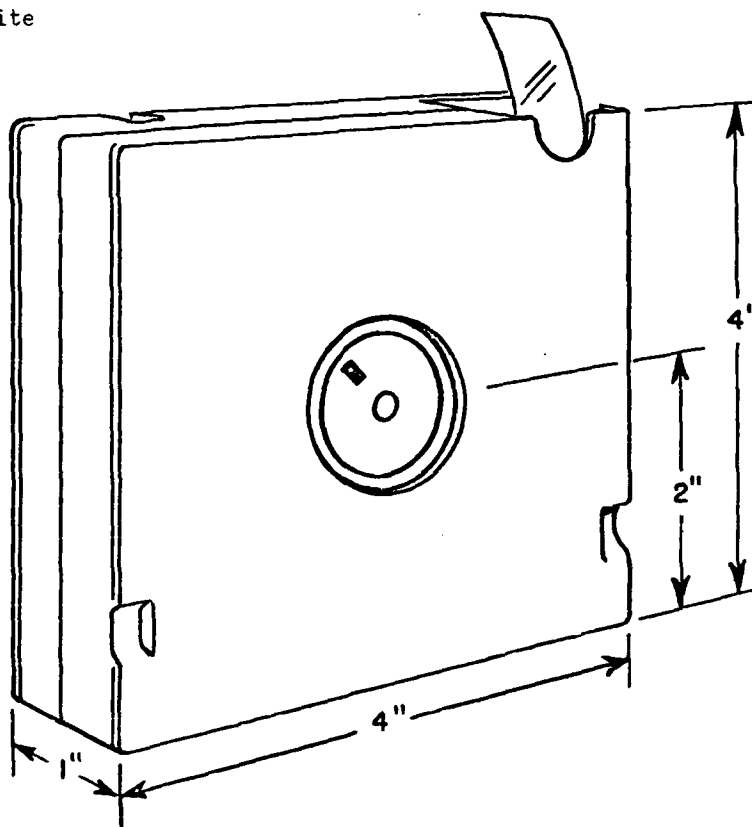
\$1.45 ea.  
\$1.15 ea.

2A

\$1.55 ea.  
\$1.25 ea.

Compatible with:

Dietzgen 4317  
Microfilm Products 2000  
Ednalite



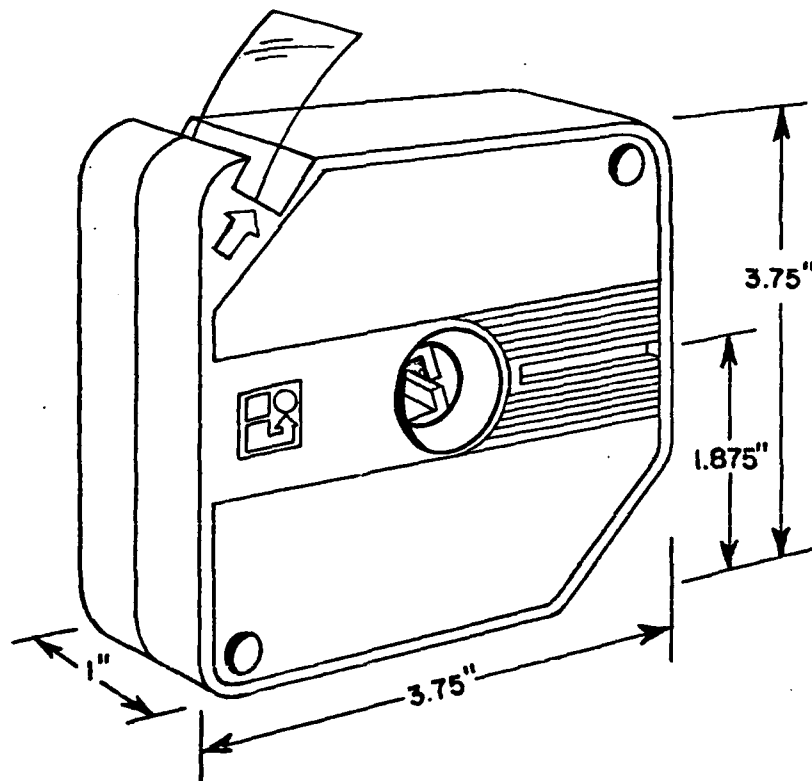
Manufacturer: Information Design, Inc.  
Address: 3247 Middlefield Road  
Menlo Park, California 94025  
Person to  
Contact: Brett Butler, Marketing Manager

Type:  
16mm Cartridge

Used With: Most reel type equipment, such as Recordak MPE,  
Magnaprinter, Xerox 1414 & Microprinter, 3m Filmac  
100, 200R, 400 M&P, and others using standard reel  
spindle. Conversion kits required.

Film Size &  
Capacity: 16mm x 100' (5 mil film)  
Spindle Type: Standard 5/16" square shaft  
List Prices:

1 - 999	\$1.25
1000 - 4999	\$1.15 each
5000 - 10,000	\$1.05 each



Manufacturer: Information Design, Inc.

Type:  
35mm Cartridge

Address: 3247 Middlefield Road  
Menlo Park, California 94025

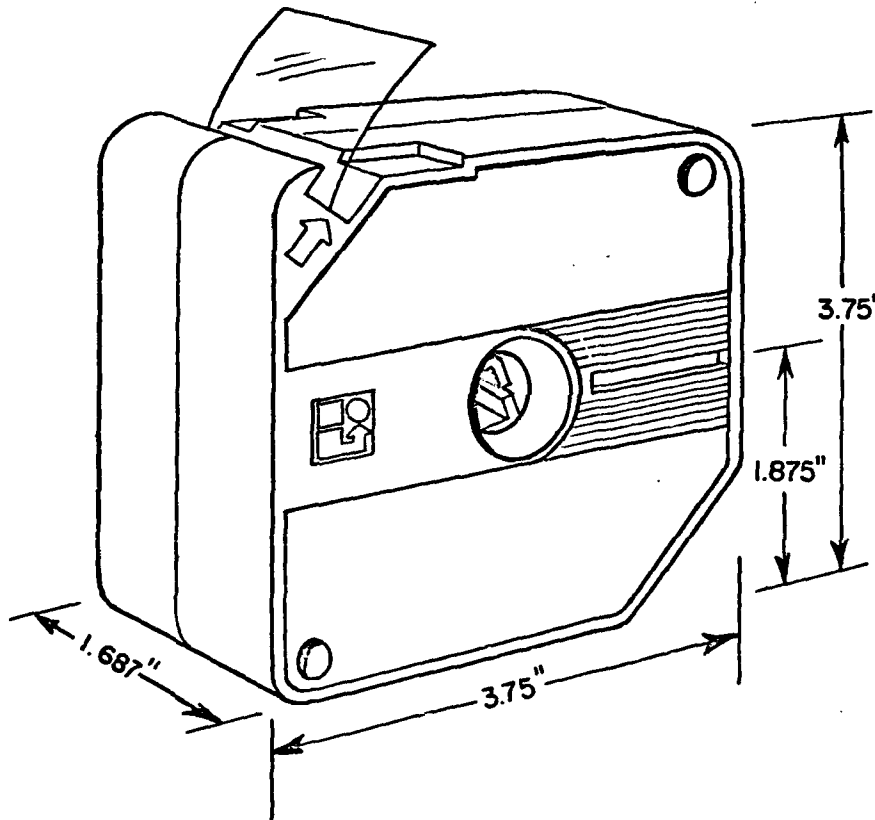
Person to  
Contact: Brett Butler, Marketing Manager

Used with: Recordak MPE, 3M Filmac 100, 200R, 400 M & B, and others  
use standard reel spindle  
(conversion kits required)

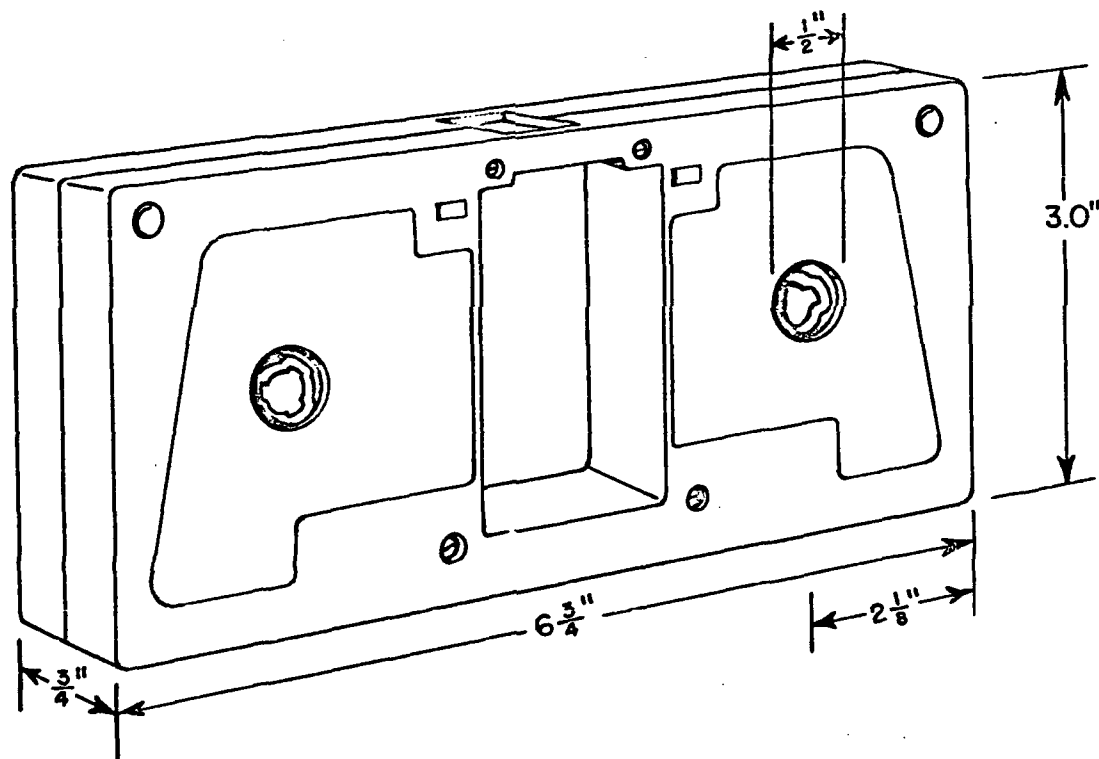
Film Size &  
Capacity: 35mm x 100' (5 mil film)

Spindle Type: Standard 5/16" Square Shaft

List Prices: 1 - 999 \$1.85 each  
1000 - 4999 \$1.70 each  
5000 - 10,000 \$1.60 each



Manufacturer: Information Handling Services Type: 16mm Cassette  
Address: 5500 South Valentia Way  
Englewood, Colorado  
Person to  
Contact: Unknown  
Used with: VST Satellite II  
Film Size &  
Capacity: 16mm x 100' (5 mil base)  
Spindle Type: Special  
List Prices: 3.00 each



Manufacturer: Memorex Corp.

Type:  
16mm Cassette

Address: San Tomas & Central Expressway  
Santa Clara, California

Model: C-100

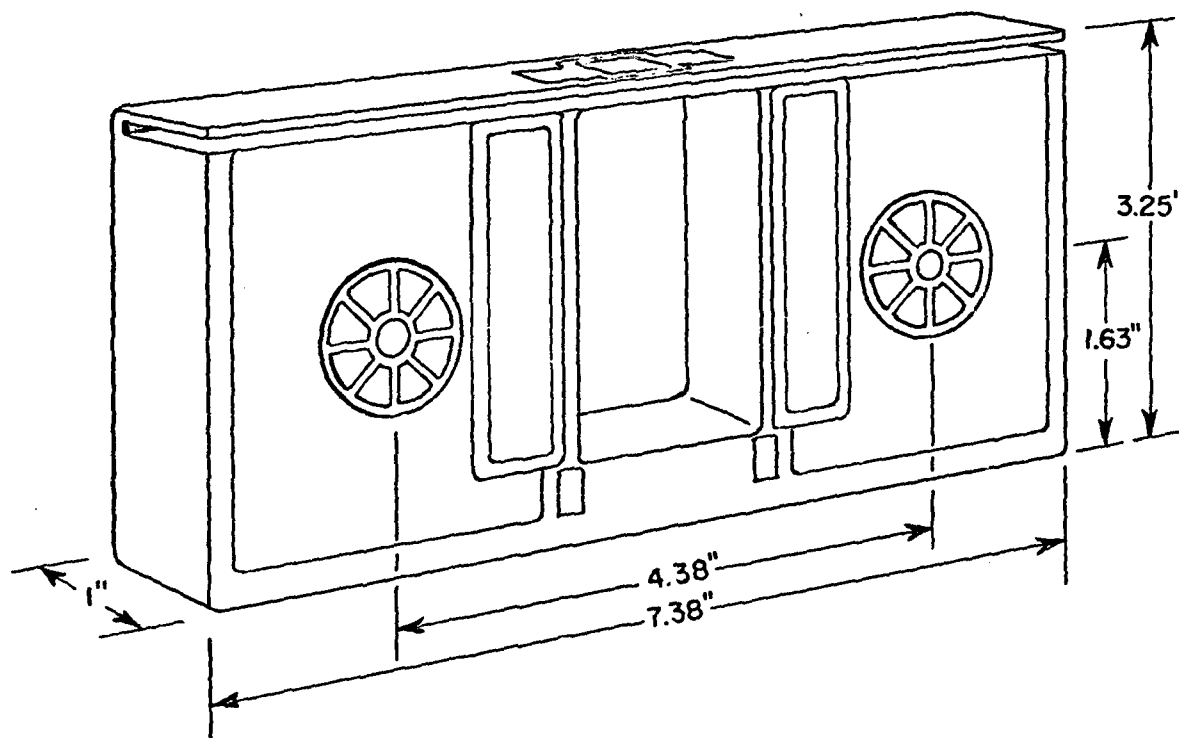
Person to  
Contact: A. G. Orsborn

Used with: Memorex 1642 Viewer  
Memorex 1643 Autoviewer  
Memorex 1650 Viewer/Printer

Film Size and  
Capacity: 16mm x 50' (5 mil)

Spindle Type: 15/16" special

List Prices:	20 - 80	\$1.75 each
	100 - 180	\$1.50 each
	200 - 980	\$1.35 each
	1000 +	\$1.25 each



Manufacturer: Micro 8 Company

Type:  
8mm cassette

Address: P.O. Box 1087  
LaCrosse, Wisconsin 54601

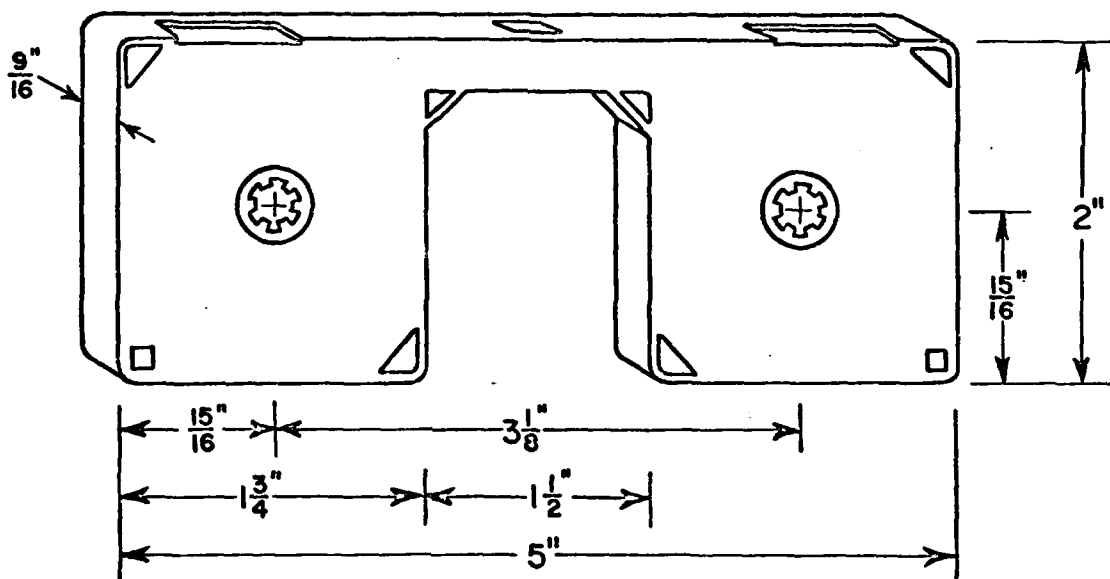
Person to  
Contact: A. L. Baptie

Used with: Micro 8 Model A  
Micro 8 Model C

Film Size and  
Capacity: 8mm x 50' (thin base)

Spindle Type: 5/16" special

List Prices: \$1.50 each  
Quantity discounts available



Manufacturer: Stromberg Datagraphix      Type: 16mm Cartridge  
Address: P. O. Box 20291      Model: SD 1700  
San Diego, California 92120

Person to  
Contact: Mr. Donald Stanley

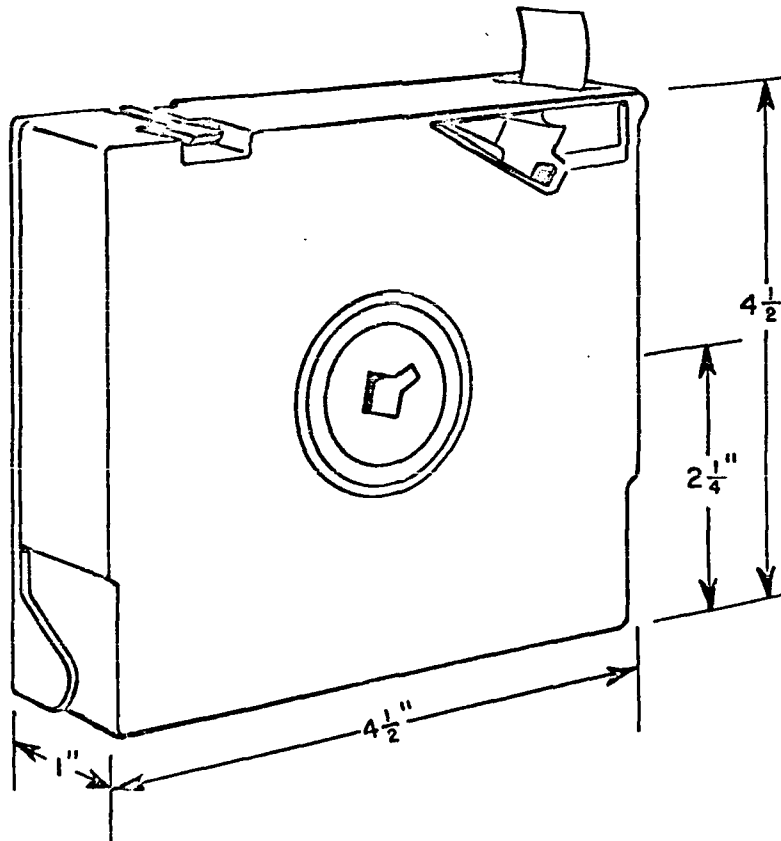
Used with: Datagraphix 1700 Roll Film Inquiry Station

Film Size &  
Capacity: 16mm x 100' (5 mil film)

Spindle Type: Standard 5/16" square shaft with 1-3/8" centering  
shoulder

List Prices: SD 1700 Cartridge Assembly

	<u>10-90</u>	<u>100-190</u>	<u>200 +</u>
Shell	\$ .505 ea.	\$ .425 ea.	\$ .365 ea.
Spool	<u>.565</u>	<u>.505</u>	<u>.445</u>
	\$1.070 ea.	\$ .930 ea.	\$ .810 ea.



Manufacturer: 3M Co., Microfilm Products Division

Type:  
16mm Cartridge

Address: 3M Center, Building 235-2A  
St. Paul, Minnesota 55101

Person to Contact: S. M. Trippe

Used with: 3M 400C Reader & Reader/Printer  
3M 700 Readers

Compatible with: (requires spindle adaptor)

Recordak P-20 Reader  
Washington Scientific Industries Reader  
Ednalite 1670 Reader  
Microfilm Products 2000  
Dietzgen 4317

Film Sizes & Capacity:  
16mm x 100' 6 mil film

Spindle Type:  
Patented drive

List Prices:  
\$1.25 each

